

ABSTRACT

The present invention provides a process of producing a porous insulating film effective as an insulating film constituting a semiconductor device and a process of producing a porous insulating film having high adhesion to a semiconductor material, which is in contact with the upper and lower interfaces of the insulating film. Gas containing molecule vapor of at least one or more organic silica compounds, which have a cyclic silica skeleton in its molecule and have at least one or more unsaturated hydrocarbon groups bound with the cyclic silica skeleton is introduced into plasma to grow a porous insulating film on a semiconductor substrate.